City of Los Angeles California
Department of Recreation and Parks

Assessment of Three Moreton Bay Figs
El Pueblo de Los Angeles Historical Monument

PREPARED BY

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OVERVIEW

ArborPro, Inc. is a full-service Urban Forestry consulting company. We provide municipalities, universities, and government agencies with an array of products and services. Our core services include GPS tree inventories, GIS-based management software, Urban Forest Management Plans, Planting Plans, Tree Risk Assessments, and public education on the benefits of trees and tree inventories. We have been providing these services for over 18 years.

Background and Assignment

In March of 2019 a large Moreton Bay fig (*Ficus macrophylla*) in the Plaza Kiosko at the El Pueblo Historical Monument failed. The tree was one of four that were planted in approximately 1875. In June of 2021 the City of Los Angeles Department of Recreation and Parks issued an RFP to perform tree evaluations to assess the vitality of three remaining Moreton Bay figs. A risk assessment of each tree was also requested. ArborPro Inc. was awarded the contract in November 2021.

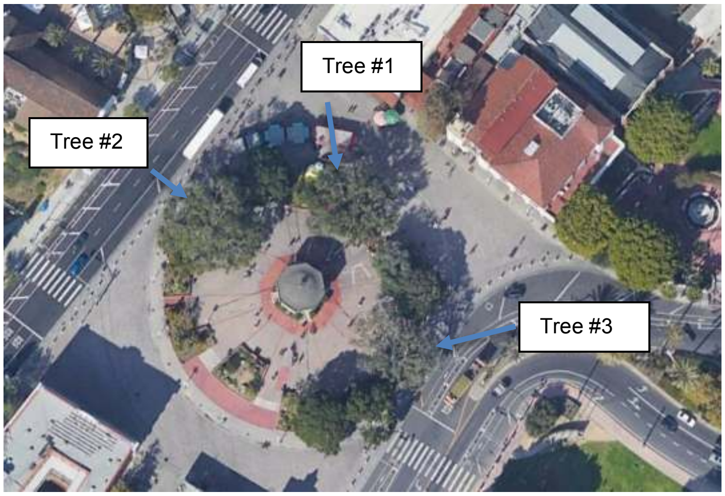

Photo 1: Plaza Kiosko

This report contains the results of the evaluations of tree vitality and the risk assessment. The risk assessment component of this report is valid for 1 year from the date of the report. This time frame is not to be construed as a guarantee that any of the trees will not fail within that period. Information in this report is intended to assist the Department of Recreation and Parks in the management of the trees.

Observations and Methodology

On November 04, 2021, ArborPro inspected three Moreton Bay figs trees at Plaza Kiosko. A Level II Basic Assessment and ISA Tree Risk Assessment guidelines were utilized to determine tree vitality, risk of failure, and structural integrity. Visual tree assessments were conducted from the ground by inspecting all visible areas of the trees including their root crowns, trunks, and canopies. The root crown inspection consisted of an examination looking for signs of fruiting bodies, cavities, defects, and used a rubber mallet to sound the root crown in multiple locations and a probe to look for decayed areas.

The attributes and observations for each tree follow,

Tree #1	Moreton Bay fig (*Ficus macrophylla*)
Height	45’
Canopy Spread	75’
Diameter at Breast Height	72”
Supplemental Support System	5 rods and 1 cable
Canopy Dieback (Estimated)	20%
Form	Typical for the Species
Vitality	Fair to Poor
Foliage Density	Thin
360° Root Collar Inspection	Small cavity at the base
Root Collar Sounding (with mallet)	No decay detected
Note	Old topping cuts present
Planting Type	Raised planter

Tree #2	Moreton Bay fig (*Ficus macrophylla*)
Height	60’
Canopy Spread	75’
Diameter at Breast Height	71”
Supplemental Support System	4 cables,
Canopy Dieback (Estimated)	35%
Form	Typical for the Species
Vitality	Fair to Poor
Foliage Density	Thin
360° Root Collar Inspection	No decay detected
Root Collar Sounding (with mallet)	No decay detected
Note	Old topping cuts present
Planting Type	Raised planter

Tree #3	Moreton Bay fig (*Ficus macrophylla*)
Height	40’
Canopy Spread	52’
Diameter at Breast Height	53”
Supplemental Support System	4 rods, 1 cable
Canopy Dieback (Estimated)	20%
Form	Typical for the Species
Vitality	Fair to Poor
Foliage Density	Thin
360° Root Collar Inspection	No Decay Detected
Root Collar Sounding (with mallet)	No Decay Detected
Note	Old topping cuts present
Planting Type	Raised Planter

Irrigation System

On the day of the site visit each valve (there are multiple valves due to planter size) was activated and observed in operation by ArborPro. The irrigation system is activated manually on average three times a week for 10-12 minutes per cycle. At the 10-12 minute time run-off occurs. The system is a mixture of rainbird and champion bodies and nozzles. The system is observed operating three times a week by the currently assigned landscape technician. The system is frequently in a state of disrepair due to activity from un-housed peoples who remove nozzles and filters to facilitate narcotic consumption among other uses.

There have been occasions when the landscape technician has been instructed to delay an irrigation cycle due to community events.

Discussion

Please refer to photographs in appendix “A”.

The following pertains to all three trees in general. As can be seen from the above attributes the trees are in fair to poor condition. They are in fact trending to poor due to a multitude of factors. There is considerable dieback which in this case can be attributed to a lack of sufficient irrigation. The soil at the base of the trees is hydrophobic and even though there is a regular irrigation schedule much of the water does not reach the roots and runs off.

Some of the applied water is also taken up by the plant material at the base of the trees. This plant material is in good condition and is an excellent indicator of the general care being performed by those responsible for this high profile area.

The irrigation system itself is inefficient due to a mixing of manufactures and nozzles. This practice has been in place for many years and is difficult to correct without a complete system overhaul. A rough estimate using a Rainbird 1800 series full nozzle using triangular spacing gives us a precipitation rate of .72 inches per hour. Using our run times of 10-12 minutes means each nozzle will deliver .12 inches or approximately .10 gallons per minute. Every 10 nozzles equal 1 gallon per minute and 10 minutes run time equals 10 gallons. Using these rough calculations, I believe that the trees are receiving perhaps fifty or so gallons per week. Clearly not enough for the trees to replace foliage lost through normal defoliation let alone replace leaves lost due to the lack of water.

As the trees defoliate the ability to photosynthesize is diminished. The diminished photosynthesis results in less "food" being created for the trees to grow. This results in root loss and less new foliage each year.

As the roots systems decline and die back this development will be evident in the canopy. We were informed that the trees from time to time shed branches. This is one way the trees respond to a lack of water by eliminating parts they can no longer support. Before dropping branches, the trees will begin defoliating. This again is a survival strategy to assist the tree in coping with a limited water supply.

This cycle has been going on for a long time and the trees are doing their best to survive. Some years they may get more water due to rains and this is beneficial. Other years they rely on the water supplied by the irrigation systems. As previously stated, the current irrigation schedule is three times a week for 10-12 minutes per cycle. What we do not know is what was the previous schedule. This is because the current landscape technician and supervisor have been caring for this location for approximately two years.

There is no evidence of pest or disease that would cause the symptoms seen in the trees at this time. The buttress roots and trunk up to 6' feet when sounded with a mallet did not exhibit any signs of decay other than a small area on tree #1. This area was probed, and no indication of active fungus was revealed. There are no signs in any of the trees that would indicate a different cause for the decline.

Another issue to consider is the available soil volume for the trees. Each of the trees is in a raised planter with a finite amount of soil volume. We were also informed that there are restrooms below the gazebo and the concrete may extend past the restroom footprint further limiting rooting area for the trees.

Recommendations

The following recommendation is made on the assumption that the trees' root systems are free of any detrimental fungal activity. The root systems should be partially exposed using an air spade. Once exposed the roots should be examined by ArborPro to determine their vitality and the ability to generate new growth. If it is determined that the root system is incapable of generating new growth, then the recommendation will be removing the trees because they will continue to decline. The rate of decline cannot be determined so it is quite plausible that the trees will live for many more years.

If on the other hand the roots system appears to have an acceptable level of vitality and it is anticipated that the trees can thrive if given the proper care the following strategy is suggested.

Remove all plant material from the planters. Use an air spade to fracture the soil to allow for water penetration into the root systems. The soil fracture project presents an opportunity to install an irrigation system that can more efficiently deliver water.

The installation of a new irrigation system should be done in such a manner as to not disturb or damage any of the roots. This may not be possible so a minimal damage approach should be devised. It may be an opportunity to install a subsurface drip system which can "tap" into the existing system. The system should also be operated with a controller which can be wireless if necessary.

Once the plant material has been removed and the irrigation system addressed some sort of barrier should be installed to prevent people from recreating, walking, or sleeping in the planters as this type of activity will lead to soil compaction. The objective at this point is to keep the soil friable to allow significant amounts of water to reach the roots.

Each tree should be pruned to remove deadwood at this time. The reason to remove the deadwood is twofold. First, once the deadwood has been removed, we are certain it will not detach from the tree and possibly injure someone. Secondly, the removal of the deadwood provides a baseline to determine if the tree is responding to any treatments. It is suggested that photographs be taken immediately after the deadwood has been removed to provide a benchmark for future inspections.

The trees rely on living foliage to manufacture food and as such all caution should be taken to not remove any living foliage for the next several years. Additionally, the application of fertilizer will cause the tree to use stored energy to create new foliage. This can lead to a depletion of reserved energy which should be avoided due to the trees' inability to rapidly replace the energy reserves.

Risk Assessment

Living with trees is living with risk. The International Society of Arboriculture says that there is no way to guarantee a tree will not fail. Conditions that affect trees frequently change further complicating the ability to predict tree failure. The risk assessment assumes weather conditions "normal" for the location. Extreme weather events can cause tree failures or weaken trees increasing the potential of future tree failure. If after this report the subject trees are exposed to an extreme weather event a re-assessment is recommended.

The subject trees are part of the El Pueblo de Los Angeles Historical Monument. The monument is famous for being the birthplace of America's second largest city Los Angeles. The city of Angels is home to almost 4 million permanent residents and is a tourist hot spot with 50 million people visiting yearly. The Monument offers many distractions for locals and tourists alike with museums, exhibits and vendors who sell souvenirs among other things.

The trees reside in an area categorized as frequently occupied with tourists and locals relaxing on benches located directly beneath the trees, conducting business in the marketplace, or attending a church service. Special events centered around the Gazebo area a regular occurrence.

There are large statues located at the bases of trees Nos. 2 & 3. These appear to be made of bronze and as such while they are targets the consequences of being struck by the trees is low. Both these trees are also sited adjacent to streets. It is possible that a whole tree failure could occur and impact the streets. However, the likelihood of this type of failure is improbable and the likelihood of impacting a target (vehicle) is unlikely so in this respect the trees are a low risk.

The final and most important target to consider is people. The popularity of the Monument draws many thousands of visitors annually. This results in an occupancy rate of frequent and this assessment is based on that understanding.

Risk Assessment of Subject Ficus macrophylla - Tree 1

Likelihood of Failure
Based on the condition of the tree with many dead and dying branches and a history of branch failures, it is *probable* that the subject tree will experience a failure in the next year. The failure could occur at any time with branches of 5” in diameter or more failing.

Likelihood of Impacting Target
The likelihood of a branch impacting a target was assessed as medium for a person this results in a somewhat likely rating.

Consequences
The consequences of striking a person with a 5” branch are significant. The risk matrix classifies this tree as being a moderate risk in its current condition.

Risk Assessment of Subject Ficus macrophylla - Tree 2

Likelihood of Failure
Based on the condition of the tree with many dead and dying branches and a history of branch failures, it is *probable* that the subject tree will experience a failure in the next year. The failure could occur at any time with branches of 5” in diameter or more failing.

Likelihood of Impacting Target
The likelihood of a branch impacting a target was assessed as medium for a person this results in a somewhat likely rating.

Consequences
The consequences of striking a person with a 5” branch are significant. The risk matrix classifies this tree as being a moderate risk in its current condition.

Risk Assessment of Subject Ficus macrophylla - Tree 3

Likelihood of Failure
Based on the condition of the tree with many dead and dying branches and a history of branch failures, it is *probable* that the subject tree will experience a failure in the next year. The failure could occur at any time with branches of 5” in diameter or more failing.

Likelihood of Impacting Target
The likelihood of a branch impacting a target was assessed as medium for a person this results in a somewhat likely rating.

Consequences

The consequences of striking a person with a 5” branch are significant. The risk matrix classifies this tree as being a moderate risk in its current condition.

Recommendations

The risk identified can be mitigated by pruning the deadwood out of the trees as soon as possible. Once this is completed the risk rating can be reclassified as low.

Please let us know if you have any questions.

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APPENDIX A – PHOTOS

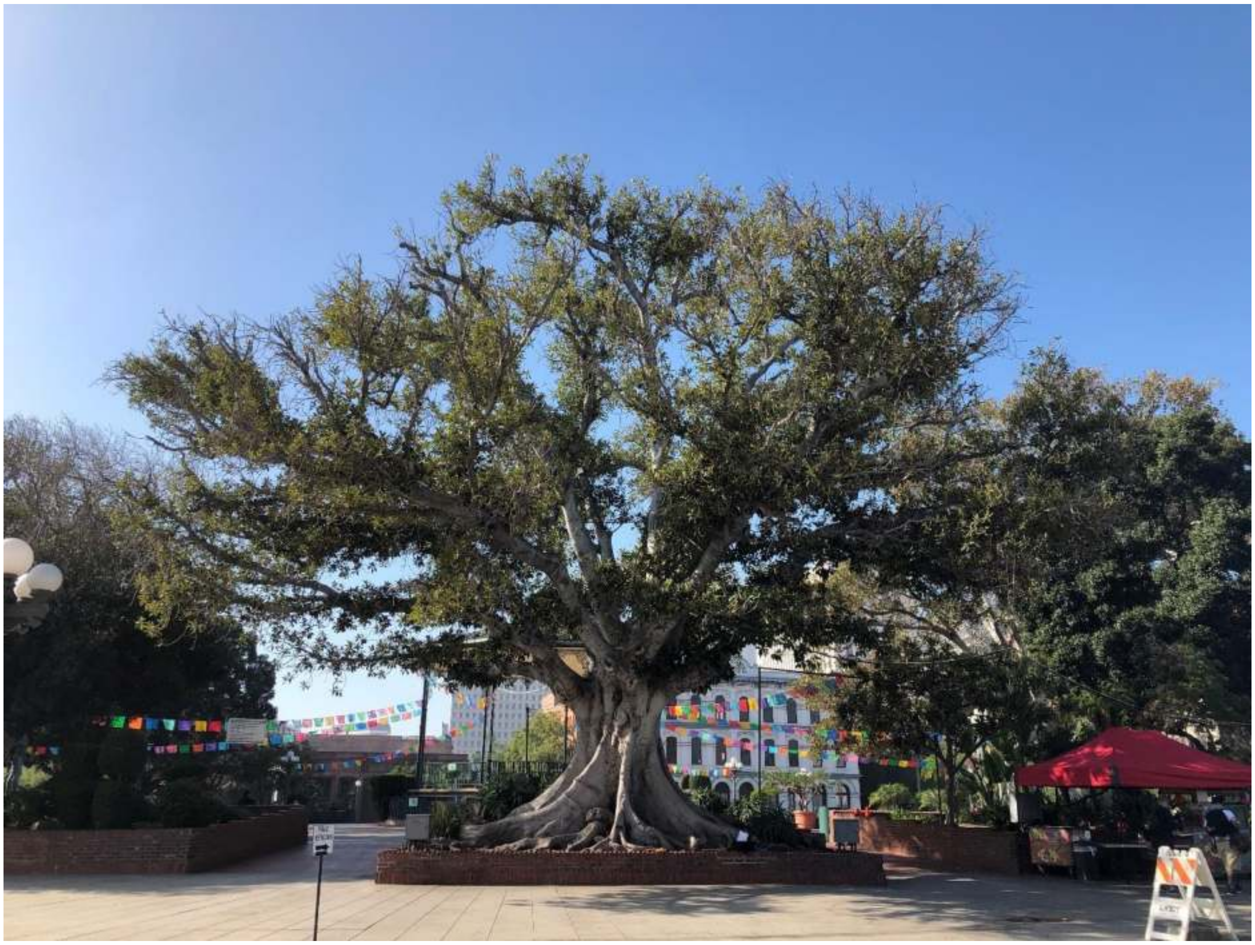

Photo 2 - Tree 1

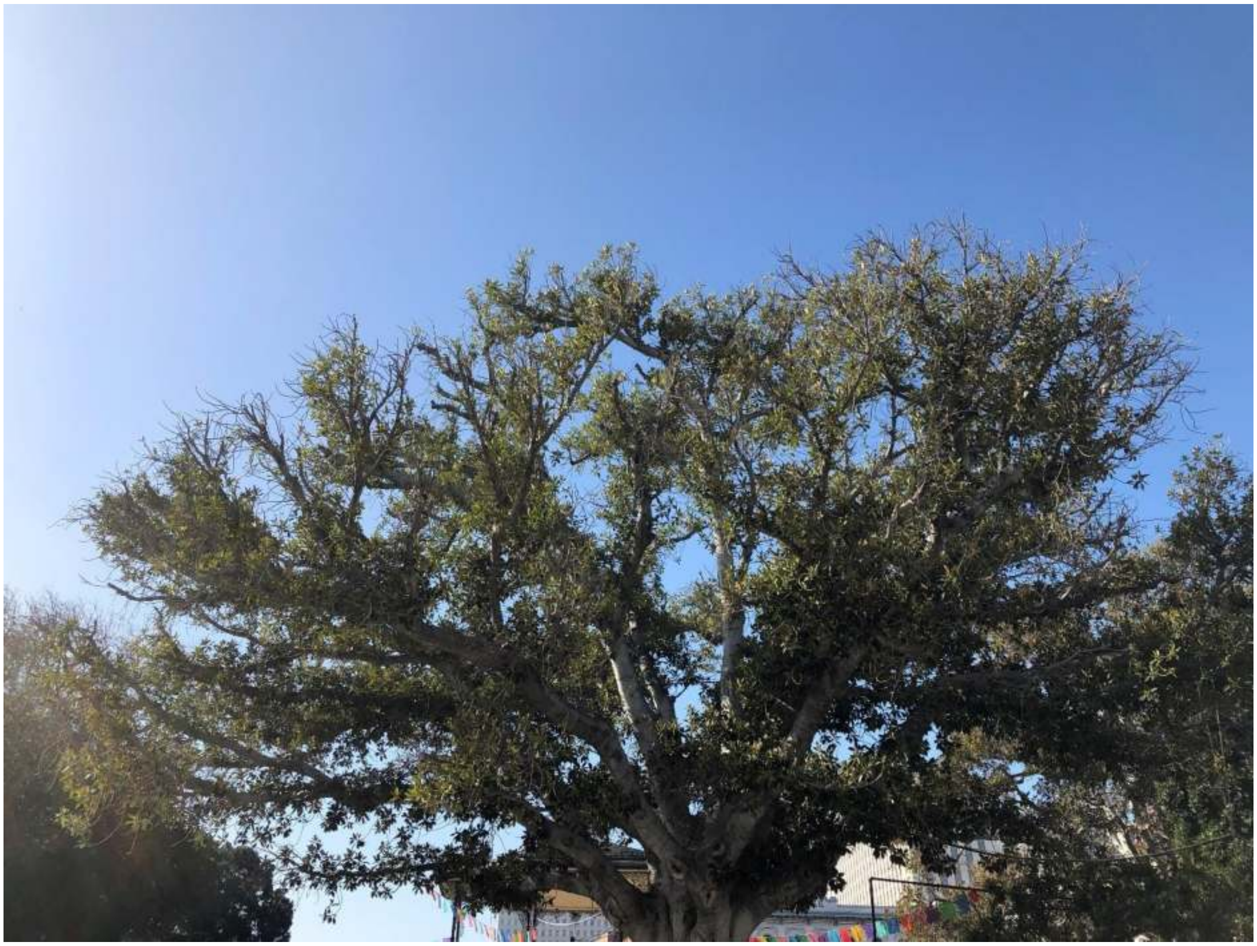

Photo 3 - Tree 1 Declining Canopy.

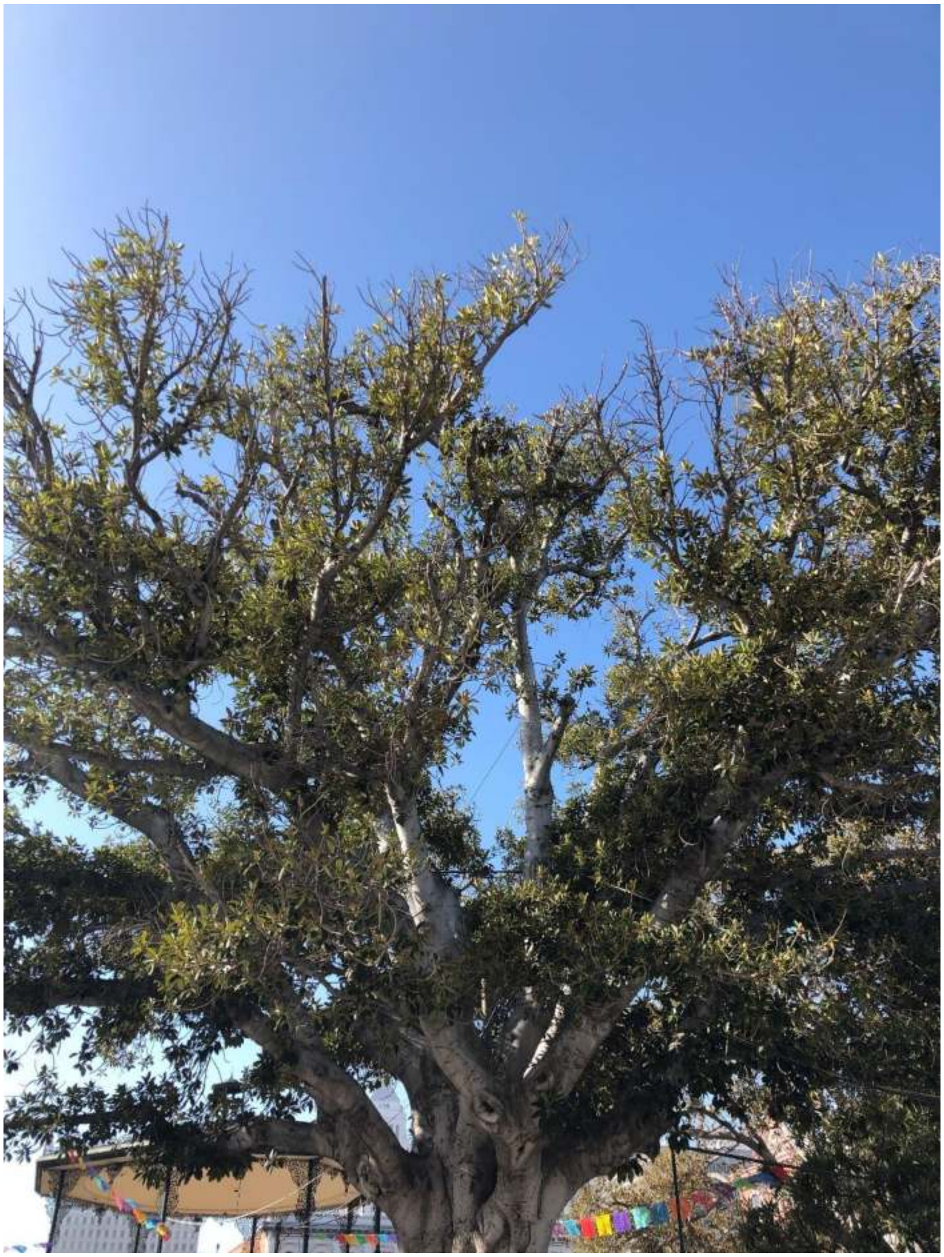

Photo 4 - Tree 1 Thin Canopy.

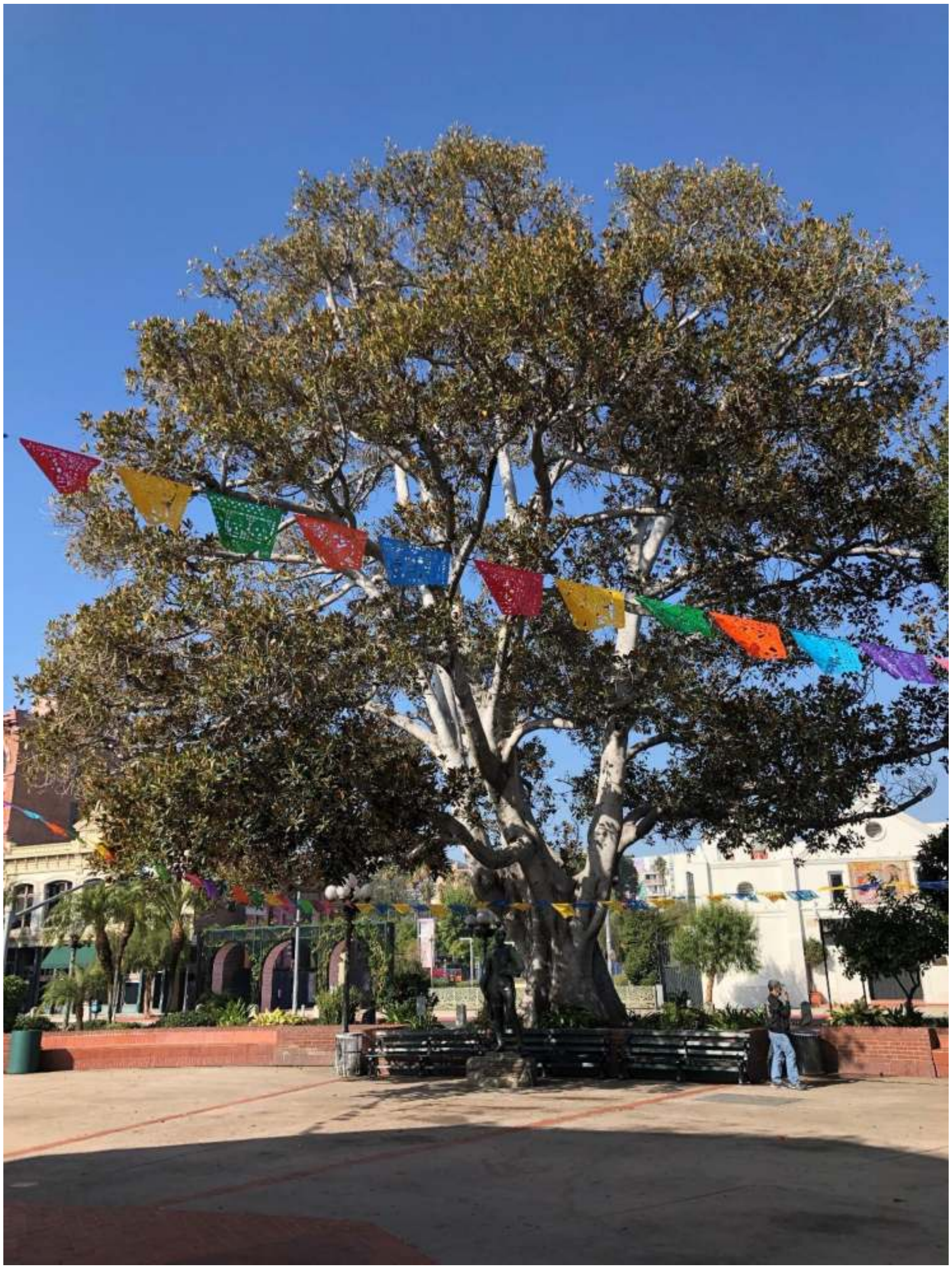

Photo 5 - Tree 2.

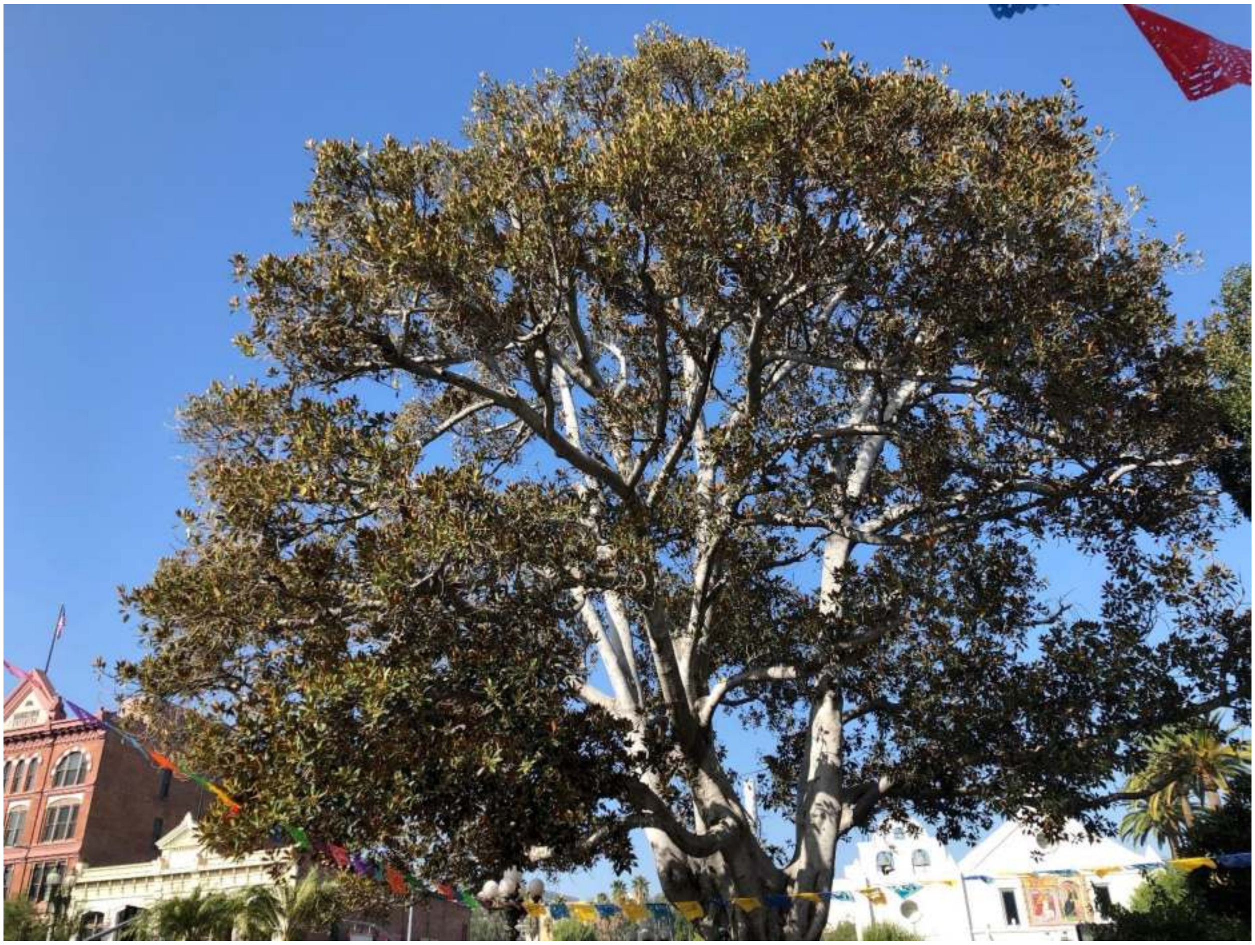

Photo 6 - Tree 2 Thin canopy.

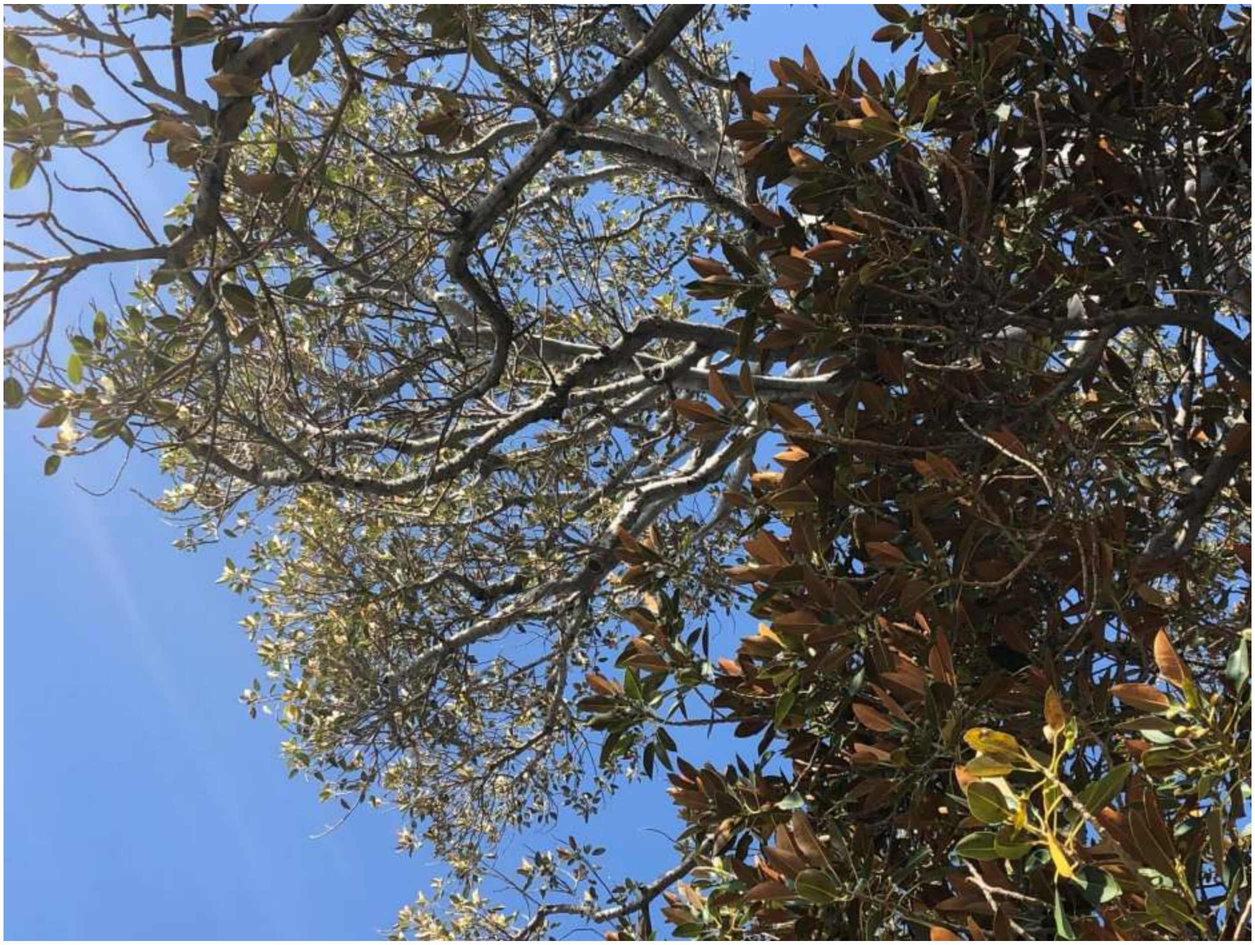

Photo 7 - Tree 2 Large branches

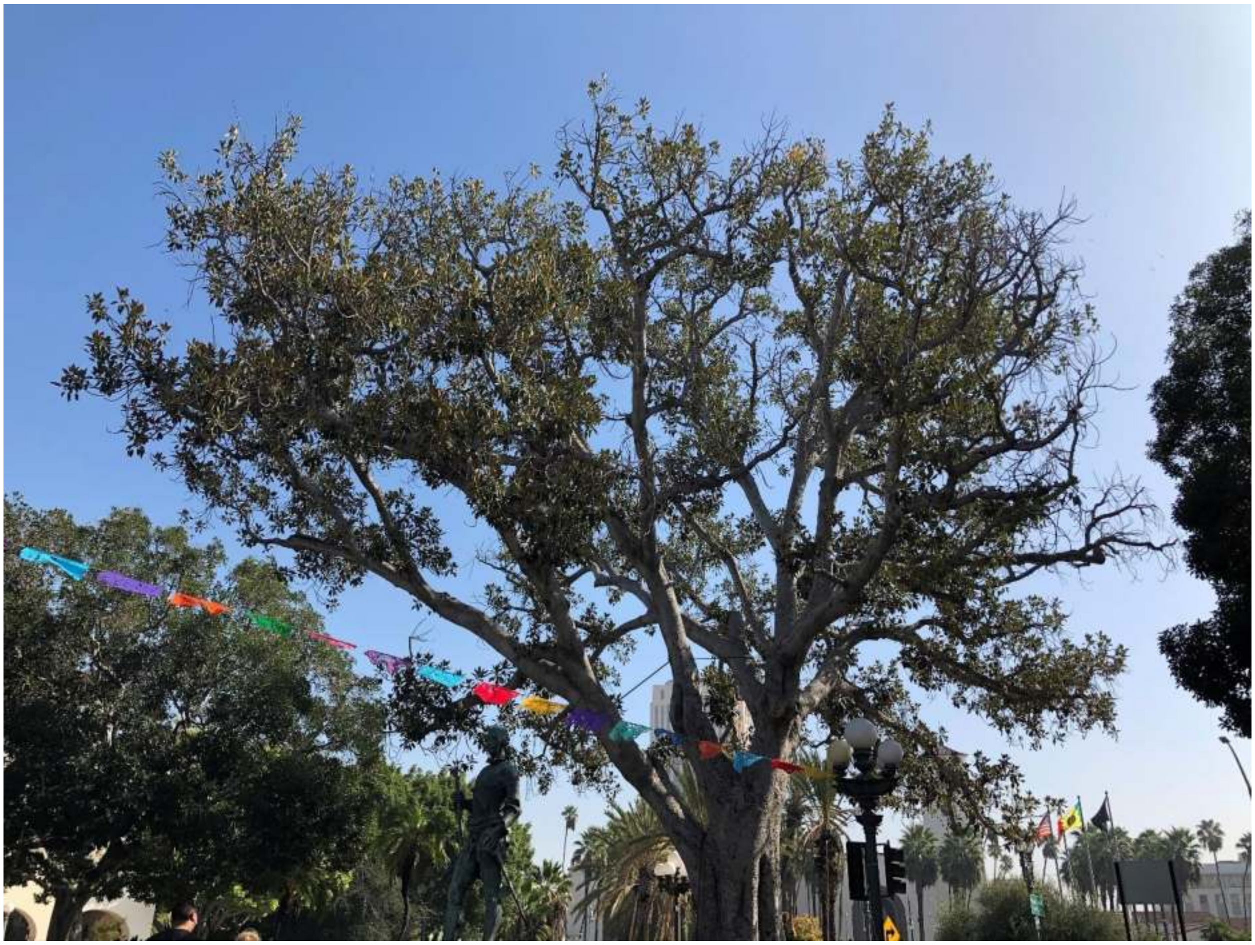

Photo 8 - Tree 3.

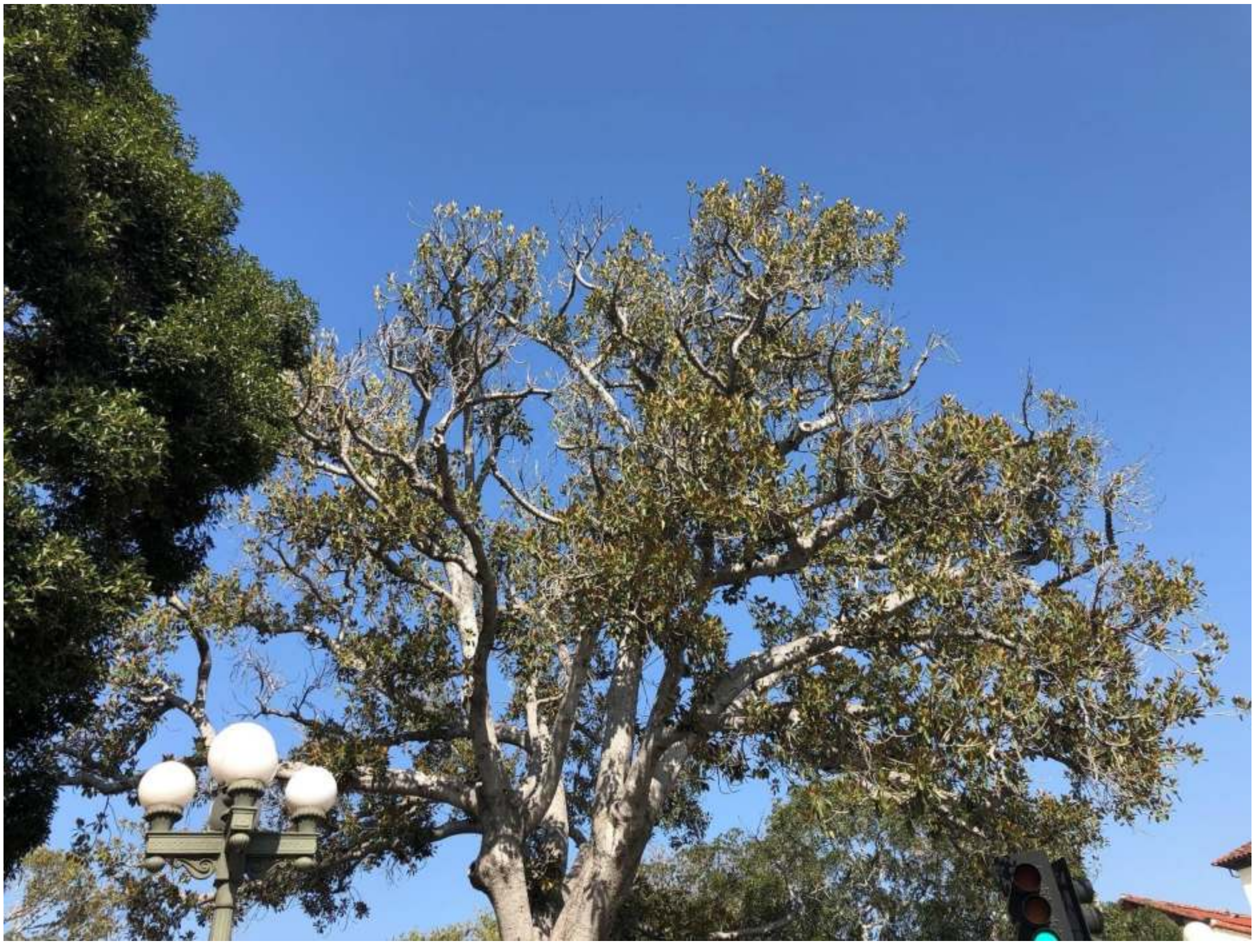

Photo 9 - Tree 3 Thin canopy.

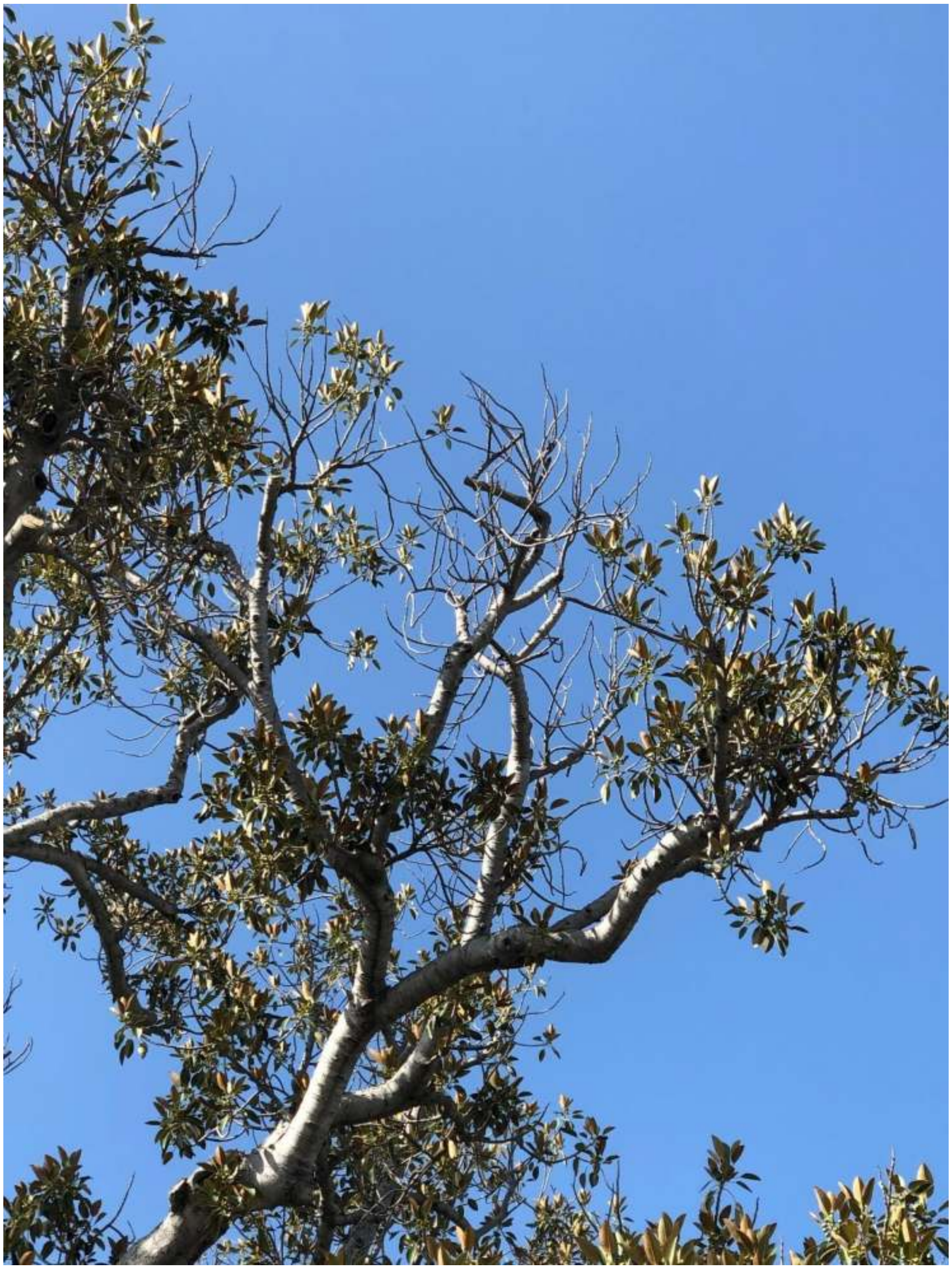

Photo 10 - Tree 3 Declining branches.

Photo 11- Thriving plant material.

Photo 12 - Plaza Kiosko Gazebo

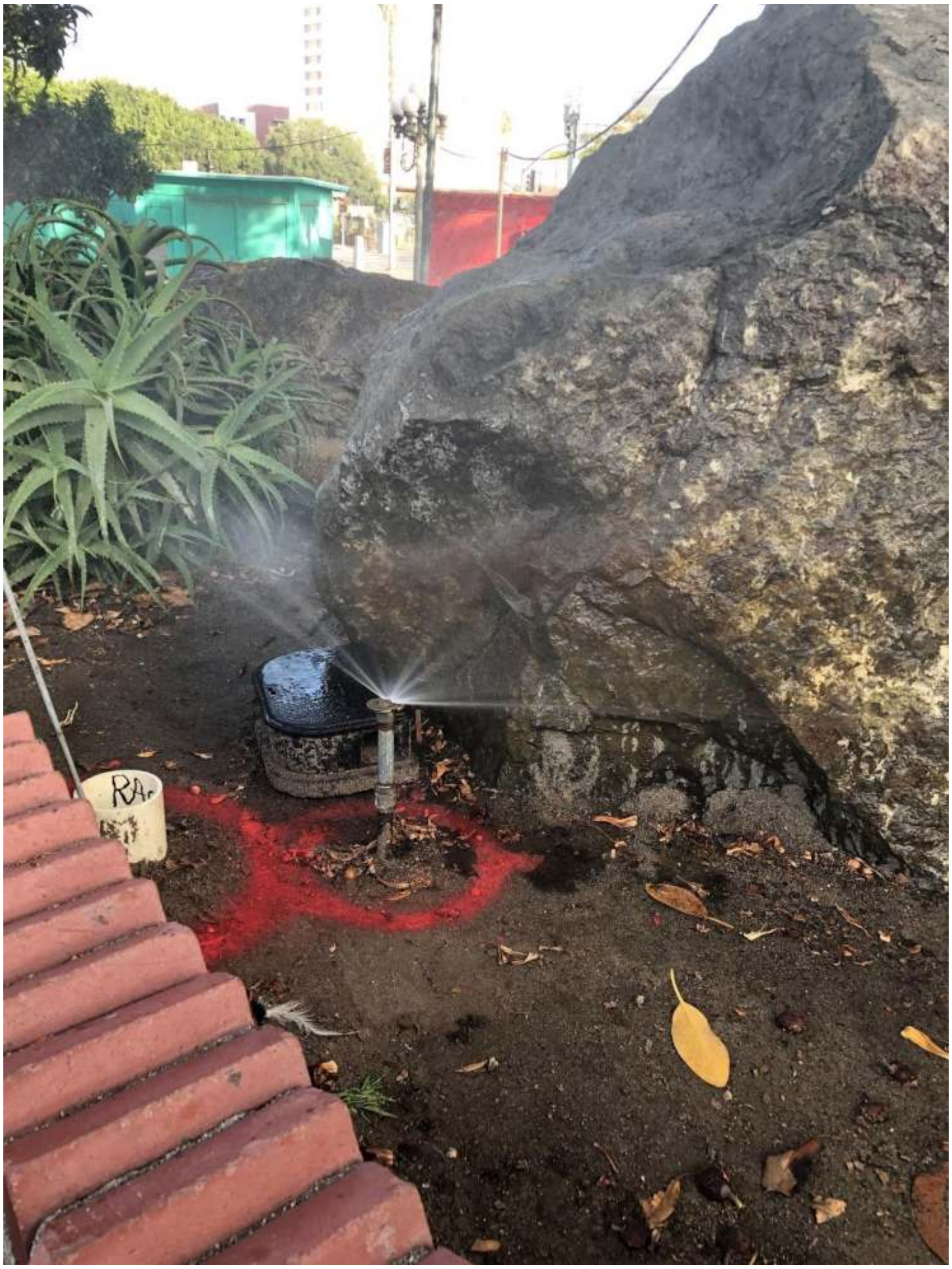

Photo 13 - Old style Champion irrigation head.

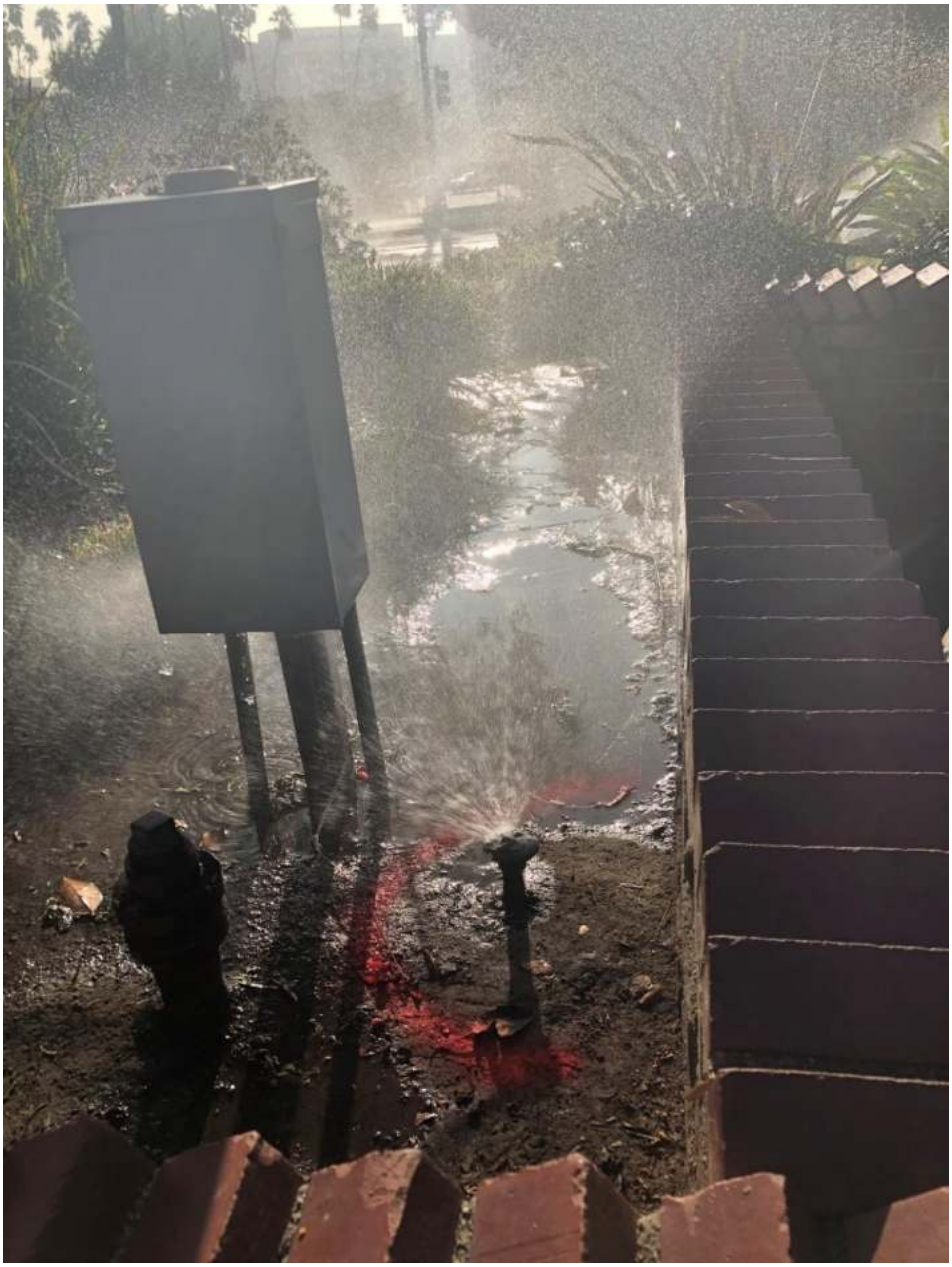

Photo 14- Hydrophobic soil & Overspray

Photo 15 - Irrigating thriving plants